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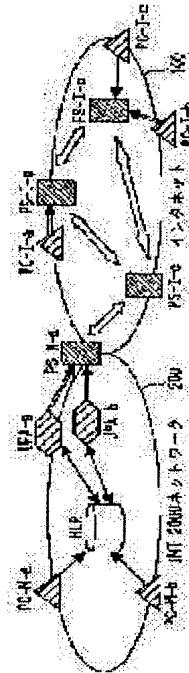
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(54) COMMUNICATION SYSTEM, SERVER FOR USE THEREIN, AGENT CONTROL METHOD, AGENT CONTROL PROGRAM

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a presence service on a network over the radio communication networks without mismatching the presence information of a user on the client side.

SOLUTION: Presence information is registered in a home location register HLR for a radio client PC-M-a. A user presence agent UPA-a informs the registration content in real time to a presence server PS-M-a. The content informed to the presence server PS-M-a by the user presence agent UPA-a is also informed to specified clients PC-I-a and PC-I-b. A presence service being provided on a network over the radio communication networks can thereby be provided without mismatching the presence information by informing registered presence information in real time.



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CLAIMS**[Claim(s)]**

[Claim 1] A registration means by which are the communication system containing the server for making a wireless network and other networks cooperate and offering presence service, and the presence information about a wireless client is registered, The agent who notifies the contents of registration to this registration means to said server on real time is included. Communication system characterized by notifying the contents which said agent notified to said server to one [at least] predetermined client of said wireless network, and a network besides the above.

[Claim 2] The server characterized by to include a means notify the contents of registration which are the servers used for the communication system which a wireless network and other networks are made to cooperate and offers presence service, and received the contents of registration of the presence information about a wireless client from a means to receive on an agent to the real time in said wireless network, and this agent to one [at least] predetermined client of said wireless network, and a network besides the above.

[Claim 3] The agent control approach which is the control approach which controls the agent in communication system including the server for making a wireless network and other networks cooperate and offering presence service, and a registration means to by_which the presence information about a wireless client is registered, and is characterized by to be included the step to which said agent receives the presence information about the condition of said wireless client from said registration means, and the step which notify this presence information that came to hand to said server.

[Claim 4] The agent control program which is the control program which controls the agent in communication system including the server for making a wireless network and other networks cooperate and offering presence service, and a registration means to by_which the presence information about a wireless client is registered, and is characterized by to be included the step to which said agent receives the presence information about the condition of said wireless client from said registration means, and the step which notifies this presence information that came to hand to said server.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention] This invention relates to the system which realizes presence service especially offered in the virtual network over a cable network and a wireless network, the server used for this system, the agent control approach, and an agent control program about communication system, the server used for this communication system, the agent control approach, and an agent control program.

[0002]

[Description of the Prior Art] It is used besides the communication service through media, such as a text, combining the presence service which notifies the presence information which is the information in connection with a user to a communications partner with the Instant-Messaging service which it is provided by the current Internet etc. and the number of users is increasing dramatically in most cases.

[0003] This presence service is realized by the application 30 of a presence server holding the presence information 300 registered from application 31a of each client which a user operates, following a certain access rule 32, and releasing and notifying the presence information 300 on a client to the applications 31b and 31c of other clients as shown in drawing 4. In addition, an unit or plural are sufficient as the application of the client of a public presentation place and a notice place.

[0004] The information which shows whether the user logs on to presence service as a class of presence information here, a user's positional information and the information (text messaging --) about the capacity of a client Various attributes about users, such as information (temporarily during work **** middle class) about a communication link condition, such as voice / still picture / animation communication link, and a file transfer, information (joy, anger, humor and pathos etc.) about feeling, and information on custom (text information which the user inputted), can be considered.

[0005] Whenever a user's presence information changes, it is the description that a client notifies the update information to a presence server in an instant, and presence service is effective service in the communication environment which the client has always connected to a network. For example, the gestalt which a client connects to the Internet through LAN (Local Area Network), a cable television network, etc. hits it. Moreover, also in radio networks, such as cellular system, wireless LAN, etc. which offer packet communication, the always-on connection with the Internet of a client may be possible, and offering presence service on it has a meaning.

[0006]

[Problem(s) to be Solved by the Invention] Here, the case where presence service is offered in radio environments, such as a cellular phone and wireless LAN, is considered. Although it is judged under physical parameters, such as electric wave signal strength, the monitor of the data link between a wireless terminal and an access point, etc. whether it is in the area where a subordinate's wireless terminal can communicate and it is managed with the control management equipment on a radio network in the usual radio network the decision information -- the application on a presence server -- it is not notified to KENYON, therefore the application on a server was not able to be judged correctly [be / it / the thing in which a wireless terminal and a communication link are possible / in an instant]. That is, the period inequality between a user's presence information which a presence server holds depending on the condition of the radio channel between a client and a presence server, and actual presence information happened, and the inaccurate presence information which is not reflecting actual presence information may have been notified to the client. For this reason, a useless communication link is performed, for a user, increase of a communication link tariff is caused and there is a problem that increase of traffic may be caused, for a communication link entrepreneur.

[0007] Made in order that this invention may solve the problem of the conventional technique mentioned above, that purpose is offering the server which uses the presence service offered on the network which straddled the radio network for the communication system which can offer the presence information of the user of a client side without an inequality, and this communication system, the agent control approach, and an agent control program.

[0008]

[Means for Solving the Problem] The communication system by this invention is the communication system containing the server for making a wireless network and other networks cooperate and offering presence service. A registration means by which the presence information about a wireless client is registered, The agent who notifies the contents of registration to this registration means to said server on real time is included. Said agent is characterized by notifying the contents notified to said server to one [at least] predetermined client of said wireless network, and a network besides the above. By notifying the presence information registered on real time, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0009] The server used for the communication system by this invention is the server used for the communication system which a wireless network and other networks are made to cooperate and offers presence service, and is characterized by to include a means notify the contents of registration which received the contents of registration of the presence information about a wireless client from a means receive on an agent to the real time in said wireless network, and this agent to one [at least] predetermined client of said wireless network, and a network besides the above. By notifying the presence information received on real time, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0010] The server for the agent control approach by this invention making a wireless network and other networks cooperate, and offering presence service, It is the control approach which controls the agent in communication system including a registration means by which the presence information about a wireless client is registered. Said agent is characterized by including the step which receives the presence information about the condition of said wireless client from said registration means, and the step which notifies this presence information that came to hand to said server. When an agent receives presence information and notifies to a

server, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0011] The agent control program by this invention is the control program which controls the agent in communication system including the server for making a wireless network and other networks cooperate and offering presence service, and a registration means to by which the presence information about a wireless client is registered, and it is characterized by to be included the step to which said agent receives the presence information about the condition of said wireless client from said registration means, and the step which notifies this presence information that came to hand to said server. When an agent receives presence information and notifies to a server, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0012] The user presence agent who synchronizes with real time and, in short, grasps the presence information of the user who operates the client on a wireless terminal in a radio network in this system is stationed. And the presence information about the user on a wireless terminal is notified to the application of a presence server from the user presence agent UPA among the presence information which a presence server holds. By carrying out like this, the inequality of presence information is avoidable.

[0013]

[Embodiment of the Invention] Next, the gestalt of operation of this invention is explained with reference to a drawing. Here, as a cable network, the Internet is taken up as a wireless network and a third generation mobile network (IMT-2000 network) is taken up as an example. In addition, in each drawing referred to in the following explanation, the same sign is given to other drawings and equivalent parts.

[0014] Drawing 1 is the block diagram showing one gestalt of operation of the communication system by this invention. The communication system by this operation gestalt makes the IMT-2000 network 200 which is a wireless network, and the Internet 100 cooperate, and offers presence service as shown in this drawing. In this drawing, two or more client PC-I-a, PC-I-b, and -- exist, respectively with presence server PS-I-a, PS-I-b, and -- which offer presence service on the Internet 100. Each presence server PS-I-a, PS-I-b, and -- shall offer service, while it is dispersedly arranged on the Internet 100 for reservation of scalability, or a load distribution and cooperates to each other. Client PC-I-a on the Internet 100, PC-I-b, and -- receive offer of presence service by logging on to service via a certain presence server PS-I-a on the Internet 100, PS-I-b, and --.

[0015] In order to offer the above-mentioned presence service also in the IMT-2000 network 200, it cooperates with the presence service on the Internet 100, and presence server PS-M-a which provides client PC-M-a of an IMT-2000 network subordinate's wireless terminal, PC-M-b, and -- with service exists. ***** [two or more installation of this presence server may be carried out, and / that installation] on the node of the Internet 100 and the IMT-2000 network 200, or the Internet 100.

[0016] A home location register HLR exists in the IMT-2000 network 200. The conditions (awaiting inside/outside of the circle, positional information, etc.) of a wireless terminal are registered into this home location register HLR. Registration to this home location register HLR is performed using the control signal used in an IMT-2000 network.

[0017] In this IMT-2000 network, user presence agent UPA-a and UPA-b which carry out the tracking of the condition of each client exist. This user presence agent UPA-a and UPA-b operate as the sequence shown in drawing 2. In this drawing, an IMT-2000 control signal is an

arrow head, and the signal of presence service is the arrow head of the double line, and is shown, respectively.

[0018] In this drawing, if client PC-M-a which is a wireless terminal goes into the service area of the IMT-2000 network 200 first, that will be registered into a home location register HLR (11). Then, the information is notified to user presence agent UPA-a (12). The approach which a home location register HLR performs actively is sufficient as this notice approach, and the approach which user presence agent UPA-a asks periodically is sufficient as it.

[0019] User presence agent UPA-a which received this notice registers presence information PI-a-on which shows that client PC-M-a logged on to presence service to presence server PS-M-a (13). It means that client PC-M-a had logged on to presence service by this. Then, the presence information is notified to other client PC-I-c and PC-M-b which client PC-M-a permits (14). In this case, it is not notified to client PC-I-a and PC-I-b which client PC-M-a does not permit.

[0020] The notice of this presence information is performed to one [at least] predetermined client of the Internet 100 which is the IMT-2000 network 200 and other networks which are wireless networks. However, it is notified only to the client by which the notice is permitted. If client PC-M-a comes out of a service area after passing for a while, the IMT-2000 network 200 will detect that by a certain approach, and it will be registered into a home location register HLR that the wireless terminal is located outside a service area (21). The information is notified to user presence agent UPA-a (22). Then, user presence agent UPA-a registers presence information PI-a-off which shows that client PC-M-a logged off presence service to presence server PS-M-a (23). Thereby, it means that client PC-M-a had logged off presence service, and the presence information is notified to other client PC-I-c and PC-M-b which client PC-M-a permits (24).

[0021] By the above-mentioned actuation, the presence information on a client can be notified to a presence server in an instant, and the inequality of the presence information by the condition of a radio channel can be avoided. In addition, although log on/log off information on service was taken up as presence information on a client in the above-mentioned example, it is also possible to treat other information (positional information etc.) registered into a home location register HLR as presence information.

[0022] Moreover, although the user presence agent UPA and a home location register HLR are another functions in the above-mentioned example, it is also possible to mount this as one equipment. Moreover, in order that the user presence agent UPA may acquire the presence information on a client, the approach of asking a direct client, without minding a home location register HLR is also possible.

[0023] By the way, the following servers are used in the communication system mentioned above. That is, it is the server used for the communication system which a wireless network and other networks are made to cooperate and offers presence service, and the server including a means to notify the contents of registration which received the contents of registration of the presence information about a wireless client from a means to receive on an agent to the real time in the above-mentioned wireless network, and this agent to one [at least] predetermined client of the above-mentioned wireless network, and a network besides the above is used. By notifying the presence information received on real time, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0024] Moreover, the following agent control approaches are realized in the communication

system mentioned above. That is, the presence information about a wireless client is registered into a home location register as shown in drawing 3 (step S101). Then, a user presence agent receives the presence information about the condition of a wireless client (step S102), and notifies this presence information that came to hand to a presence server server (step S103). Then, the presence information is notified to other clients (step S104).

[0025] That is, this control approach is the control approach which controls the agent in communication system including the server for making a wireless network and other networks cooperate and offering presence service, and a registration means to by which the presence information about a wireless client is registered, and contains the step to which the above-mentioned agent receives the presence information about the condition of the above-mentioned wireless client from the above-mentioned registration means, and the step which notify this presence information that came to hand to the above-mentioned server. When an agent receives presence information and notifies to a server, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0026] Furthermore, the agent in the communication system mentioned above will be controlled by the following control programs. That is, it is the control program which controls the agent in communication system including the server for making a wireless network and other networks cooperate and offering presence service, and a registration means to by which the presence information about a wireless client is registered, and the above-mentioned agent is characterized by to be included the step which receives the presence information about the condition of the above-mentioned wireless client from the above-mentioned registration means, and the step which notify this presence information that came to hand to the above-mentioned server. When an agent receives presence information and notifies to a server, the presence service offered on the network which straddled the radio network can be offered without the inequality of presence information.

[0027]

[Effect of the Invention] As explained above, this invention is effective in the inequality of the presence information on a client being avoidable by setting a user presence agent on a wireless network, holding the information which synchronized with the presence information on a client, and notifying the information to a presence server.

[0028] Moreover, it sets to a mobile network like the IMT-2000 network usually charged with communication link time amount or the amount of information under communication link. While a user refers to presence information, when starting the communication link using another application, by avoiding the inequality of presence information Since causing a useless communication link initiation demand to the wireless terminal on the radio network where it moved out of the service area in fact is lost, for a user, a communication link tariff can be reduced and it is effective in the ability to control unnecessary traffic for a communication link entrepreneur.

[0029] Since this system is a configuration which a user presence agent acquires, without a presence server acquiring the presence information on a direct client, it is effective in presence information being flexibly acquirable further again.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram showing one gestalt of operation of the communication system by this invention.

[Drawing 2] It is the sequence diagram showing actuation of each part in drawing 1.

[Drawing 3] It is the flow chart which shows the agent control approach realized in the communication system by this invention.

[Drawing 4] It is the block diagram showing the conventional presence structure of a system.

[Description of Notations]

100 Internet

200 IMT-2000 Network

HLR Home location register

PS-I-a, PS-I-b

PS-I-c, PS-M-a Presence server

PC-I-a, PC-I-b

PC-I-c, PC-M-a

PC-M-b Client

UPA-a, UPA-b User presence agent

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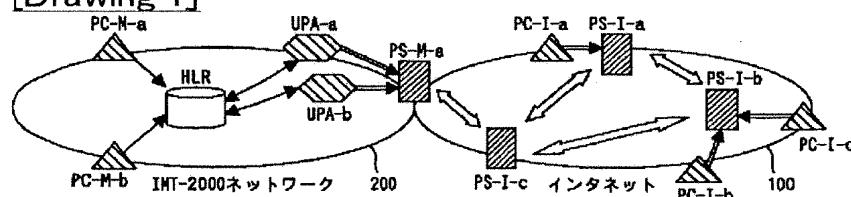
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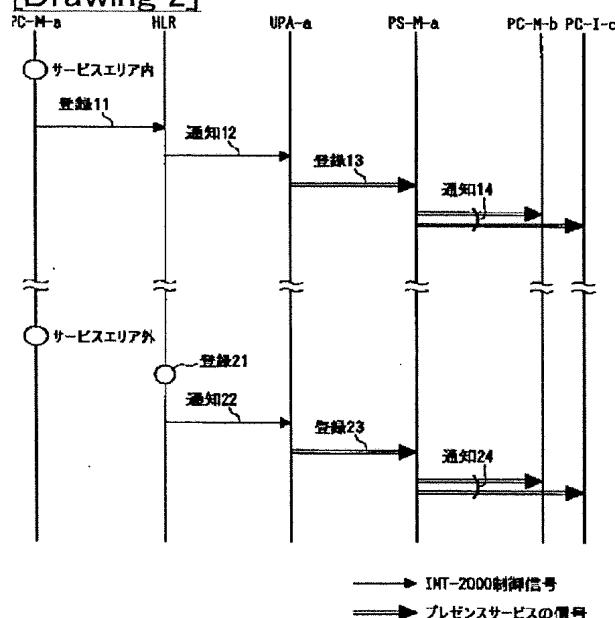
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DRAWINGS

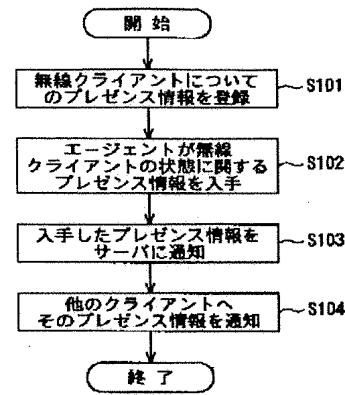
[Drawing 1]



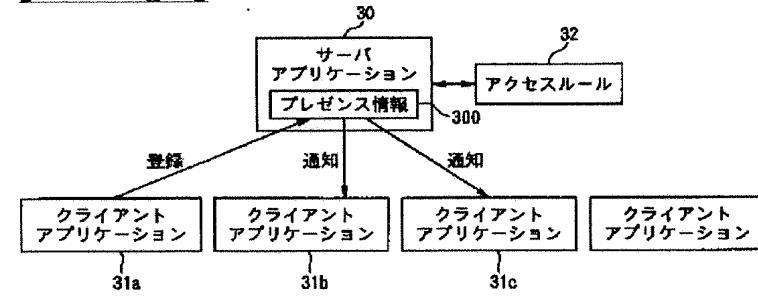
[Drawing 2]



[Drawing 3]



[Drawing 4]



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